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ON

# STRICTURES OF THE URETHRA.

RESULTS OF OPERATION WITH THE DILATING  
URETHROTOME, WITH CASES.

BY

F. N. OTIS, M. D.,

CLINICAL PROFESSOR OF GENITO-URINARY DISEASES, COLLEGE OF PHYSICIANS AND  
SURGEONS, NEW YORK.

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## ON STRICTURES OF THE URETHRA; RESULTS OF OPERATION WITH THE DILATING URE- THROTOME, WITH CASES.

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IN a paper read before the Medical Journal and Library Association of the City of New York, and published in the NEW YORK MEDICAL JOURNAL of June, 1870, especial attention was directed to the influence of strictures invading but slightly the calibre of the urethral canal, as a cause of purulent urethral discharges. It was then claimed that "the slightest abnormal encroachment upon the calibre of the urethra, at any point in its course, is sufficient to perpetuate an existing urethral discharge, and even, under favoring conditions, to establish it, *de novo*, without venereal contact." Through an article published in the same journal, in February, 1872, this position was reënfforced by the results of a further experience and study of the subject. A number of cases were then cited, where a chronic purulent urethral discharge was associated with and apparently dependent upon the presence of one or several distinct bands of stricture, and where, on account of the large calibre of the strictures, the use of the largest divulsing instruments of Messrs. Thompson, Holt & Voillemier had proved ineffectual in rupturing them. The entire incapacity of those instruments, as well as of the cutting instrument of M. Maisonneuve, was demonstrated by actual measurements which proved the divulsing capacity of the largest instrument



of Mr. Thompson to be no more than 17 English, or 28 millimetres in circumference; that of Mr. Holt, as usually constructed, about the same size; that of M. Voillemier 19½ English or 32 F.; while the cutting instrument of M. Maisonneuve, with widest blade in use, did not exceed a capacity of 21 millimetres in circumference (corresponding to 11½ of the English scale); and this blade which I now show you has been objected to by eminent surgeons on account of its extreme dimensions.

Among the cases presented in proof of this alleged incapacity was one of Mr. J. G. A., in whose urethra some half a dozen bands of stricture were present, anterior to the bulb. The history of this case was as follows:

Mr. A. came under my observation November 22, 1865, having a chronic urethral discharge, following a gonorrhœa contracted a few months previous. He had been treated by the use of various injections, which failed to afford more than temporary relief. Examination revealed a decided contraction of the meatus, which was at once freely divided with Civiale's urethrotome; after which, under the use of astringent injections, the discharge soon ceased, and he had no further trouble until May 20, 1867. At this time, after an impure connection, the purulent discharge reappeared. Again treated with mild injections, and the use of a full-sized sound, the discharge ceased on the eighth day. June 29, 1868, he again presented, with a return of the discharge, which, being submitted to treatment of the same character as before, disappeared, but more slowly, only ceasing on the 22d of July. Remaining well up to June 7, 1871, he returned with same difficulty as before. Endoscopic tube No. 20 F. was passed easily down to the bulbous portion of the canal. On withdrawal, the urethra was found generally congested, presenting at several points a sensitive granular surface. Bulbous sound No. 22 F. met with slight resistance at an inch from the meatus, and a little at the sensitive points beyond. On withdrawal, the bulb was firmly held at an inch and a quarter from the meatus, when a stricture, one-fourth of an inch in breadth, was positively defined. This stricture was incised with a narrow, straight bistoury, and the granulated points were submitted to

applications of a solution of nitrate of silver through the endoscope. Under this treatment the discharge diminished, but did not cease entirely, although the granulations had disappeared, and the mucous membrane was of nearly uniform color throughout the straight portion of the canal. Gradual dilatation was then made, and treatment by injections and medicated bougies, resorted to at regular intervals, combined with the internal use of cantharides and iron, and later with the oil of the yellow sandal-wood, until August 14, 1871, by which time the calibre of the urethra was brought up to No. 30 F. The 30 F. bulbous sound was then used, and by its aid a stricture one inch from the meatus was recognized (on the site of the old stricture), and passed with some difficulty. No. 28 F. bulb detected same obstruction, and, being carried on to the bulbous region, on withdrawal *five* other bands of stricture were defined: one at four and a half inches from the meatus, one at four; one at two and a half, one at two—each about a quarter of an inch in breadth—and another of nearly half an inch in breadth, at an inch and a half, and separated by but a narrow interval from the one previously operated on at one inch from the meatus. No. 30 F. conical sound was then passed down through all, immediately after which No. 28 F. bulb was again passed, which on withdrawal again positively defined all of the above-mentioned strictures. This was on August 14, 1871. I then introduced the divulsing instrument of M. Voillemier, and drove the largest shaft No. 32 F. rapidly down through all. The resistance to its passage was not sensibly greater than that previously found in passing No. 30 F. sound. After the operation and at the same sitting, No. 28 F. bulb was again introduced, and still distinctly defined all the strictured points, even No. 26 F. bulb indicated the points of contraction.

Having thus failed to rupture the strictures with the largest instrument available, and finding that the largest blade of the urethrotome of M. Maisonneuve could only reach to the calibre of No. 21 F. and the patient continuing unrelieved of his discharge, I devised an instrument for the purpose of effectually dividing the strictures, upon the presence of which I confidently believed the persistence of the discharge to depend.



This instrument was presented to the profession, in an unfinished state, at a meeting of the Medical Journal and Library Association, November 24, 1871, after briefly alluding to the salient features in the case of Mr. A., just cited, as the

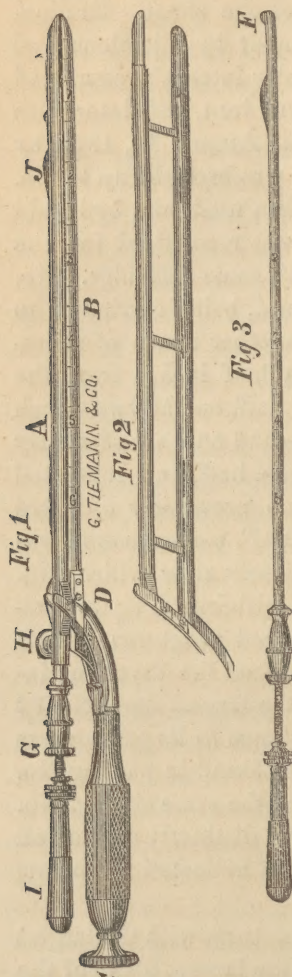


FIG. 1. Dilating urethrotome.  
FIG. 2. Dilated.  
FIG. 3. The canula.

one for the complete division of whose strictures it had been contrived. This instrument, the dilating urethrotome, manufactured in the most skilful manner by Messrs. Tiemann & Co., of New York, I have now the pleasure of presenting to this society after having tested its working capacity in the case above related and in the treatment of other strictures of large calibre.

The dilating portion of this instrument consists of a pair of straight steel bars (Fig. 2), arranged on the principle of the parallel ruler, and is capable of being expanded by means of a screw at the handle, from 23 F. (or 13 E.) to 40 F. (or 26 of the English scale), and is thus capable of making tense any stricture within those limits.

The upper bar of the instrument is traversed by a canula, F, with a bulb at its extremity, which, as the canula is moved along the bar, acts as *bougie-à-boule*, and serves, when the urethra is made tense by the separation of the bars, to detect any strictured point. A groove in the canula gives passage to a steel rod which terminates in a blade half an inch in length and one and

a half line in breadth. This blade, when at the extremity of the canula, is quite concealed, but on drawing back the rod, by an elevation on the floor of the groove in the canula, it is



made to display the full width of the blade, at one inch from its extremity (J, Fig. 1). The bars of the instrument being expanded, and the point of stricture ascertained by means of the bulb (F, Fig. 3), the canula is moved so as to make the elevation on its floor correspond to the precise locality of the stricture; then, by a rapid movement of the handle, the blade is drawn forward, and, rising up over the ridge in the groove of the canula (J, Fig. 1), it passes through the stricture, dividing it, and then passing down is again concealed in the groove. The incision thus made divides the tense stricture-tissue by a clean cut half an inch in length. Should it become necessary to make a longer incision, the blade may be elevated to its highest point and fixed, while the *canula* is withdrawn to the extent of the incision required; the blade is then drawn down and again concealed in the groove in which it runs. In this manner an incision of any desired length may be made, and, as a rule, of sufficient depth to divide completely a stricture previously made tense and thin by the expansion of the dilating apparatus.

On the morning of the 12th of January, 1872, adapting this instrument to the calibre of Mr. A.'s strictures, and having made such tension as the patient could comfortably bear, I drew the blade of the urethrotome through the anterior stricture, one and a half inch from the meatus, cutting from behind forward, then giving the dilating screw half a turn more, I incised it from before backward, closed and withdrew the instrument. On examination of the result with the 30 F. bulb, no resistance in entrance or withdrawal could be detected at the site of the stricture. The patient averred that he had not experienced the slightest pain on the passage of the knife; the subsequent hæmorrhage was very slight, and ceased in a few moments. Mr. A. then went down to his business. He called on the following morning, and stated that he had accomplished his usual work on the day previous and had had no discomfort since the operation, except a slight smarting on urination.

On the 11th of February I operated in the same manner on the second anterior constriction, with the same result as in the first.

On the 24th of February, examination showed a complete freedom from obstruction at the points previously incised, and an entire absence of the purulent discharge. At this date, I operated on the two succeeding strictures—one at two inches and one at two and a half—and the patient was directed to use the 30 F. sound daily until no bleeding followed.

On Monday, March 4th, the remaining strictures, at four inches and at four and a half, were divided, and the cut surfaces kept asunder, by the occasional introduction of a sound, until March 11, 1872, subsequent to which date no treatment of any kind has been resorted to. Early in October last, seven months from the date of the last operation, Mr. A. called to consult me in regard to a difficulty unconnected with genito-urinary apparatus. On inquiry, I ascertained that he had had no evidence of any trouble with his urethra since his last visit on March 12th. In a careful examination of his urethra with No. 30 F. bulbous sound, I was now unable to detect the slightest contraction or lack of suppleness at any point.

CASE II.—*November 16, 1871.*—Mr. M. S. came to me with the following history: Had gonorrhœa first ten years since; was treated without injections; disease lasted several weeks. A couple of years subsequent to this he had a whitish discharge from his urethra, which he first noticed shortly after connection with a woman who had scarcely completed her menstrual period. The difficulty was quite painless, but lasted noticeably for four or five months. One year after, or seven years ago, he had what was supposed to be a fresh attack of gonorrhœa, in which the inflammation ran very high, and lasted for several weeks. In this seizure he was treated by means of injections, in addition to internal remedies; a gleet discharge followed the acute symptoms, and lasted for a year, when a third acute attack occurred. To this last he paid no especial attention, until inflammation of the left testicle supervened and confined him to his bed for several weeks. From that time he received occasional treatment for a gleet, which still annoyed him, but never obtained more than a temporary relief. On one occasion following a connection, severe irritation at the neck of the bladder was set up, but



which, after a few weeks, appeared to yield to homœopathic treatment, and left him with his old gleet which had continued with slight variations up to November 16, 1871. On this date I examined his urethra; meatus apparently healthy and of normal calibre, No. 28 F. Bulbous sound No. 20 F. reveals a stricture one and a half inch from the meatus, which is exceedingly sensitive, and bleeds freely at the slightest touch.

*November 19th.*—Conical sound No. 21 F. was passed under protest, on account of the sensitiveness of the part: free bleeding again followed.

*February 24th.*—Occasional introduction of sound since last record has relieved the sensitiveness and tendency to hæmorrhage, and raised the calibre up to 23 F. Bulbous sound again used, and shows the stricture at one and a half inch from the meatus to consist of three distinct bands close together—the first one-fourth inch in breadth, the second half an inch from it, of about same breadth, and the third separated from it by scarcely a quarter of an inch. The dilating urethrotome was then introduced with the blade set for the posterior stricture, expanded up to 26 F., which was all the patient would bear, and the stricture incised from behind forward, and also from before backward, without moving the instrument. It was then closed and set for the anterior stricture; this was also divided, the instrument closed and withdrawn. The patient remarked that the pain of the entire operation was not sensibly greater than that following the first introduction of the sound. The incision bled quite freely, but the hæmorrhage, under gentle pressure, soon subsided. The results of the cutting were not then examined.

*February 27th.*—Examination with No. 27 bulb showed resistance, on entering upon the site of the second stricture. On withdrawal, a narrow band was found remaining—this was cut, March 8th, after the manner of the previous operation, and No. 27 bulb passed beyond the site of the strictures, until, at three inches from the meatus, another narrow band was discovered, and at four inches still another. Although these last strictures were distinctly appreciated by the patient as well as by myself, he expressed an unwillingness to submit to any further interference until he could ascertain whether

or not the previous operations would give him relief from his discharge.

*March 23d.*—Patient has introduced No. 27 sound past the seat of his anterior strictures at intervals of a day or two since his last visit, as directed by me, in order to maintain the complete separation of the previous incisions. This was advised to be continued until no oozing of blood followed the use of the instrument. The locality of the wounds made in the previous operation was examined through the endoscope, and healing was seen to have been complete, but the discharge was still present. At this time, by the patient's request, the dilating urethrotome was introduced, dilated to No. 27, and the deeper strictures were again examined and readily defined by means of the indicator attached to the extremity of the canula in which the blade of the urethrotome runs. The instrument was then adjusted for the posterior structure. This was rapidly incised on its superior surface. Setting it again for the anterior band, a like incision was made through it—a turn of the dilating screw giving no pain to the patient, was the evidence that the division of the strictures had been complete; but the patient, fearing an imperfect result similar to that occurring in the first operation, requested that the strictures might be incised on the inferior surface also. Seeing no objection to this, I did so, measuring their locality from the outside, as they could no longer be distinctly defined by the indicator. The incisions on the superior aspect of the urethra were attended with but little hæmorrhage, but those on the inferior surface were followed by copious bleeding, which was only controlled by the introduction of a large flexible bougie. Removing it after an hour, a gush of blood followed. It was then readjusted and retained by a bandage, for the night. The following day, on removal of the bougie, blood again flowed freely. A hard-rubber tube was then introduced, through which the patient could urinate. This was worn constantly for the three succeeding days. No. 28 sound was then introduced with ease, and patient directed to pass it upon himself daily for one week; since which time I have not treated him for his strictures. The gleet disappeared, without other care, in about



a fortnight after the last cutting, and he has remained free from it up to the present time. I made a careful exploration of the urethra of this patient in the early part of October last, nearly seven months from the date of the last operation, with No. 28 bulbous sound (the previously-noted calibre of the meatus), and was unable to detect any remains of stricture at any point.

CASE III.—Mr. J. C. came under my care in July, 1870, with a first attack of gonorrhœa, which lasted for two months under a combined treatment of copaiba and injections. Subsequent to this, from drinking much beer, he had several returns of the discharge, which readily disappeared under the use of mild injections. In July, 1871, a profuse, painless purulent discharge followed a suspicious connection. This resisted the usual local means, but was controlled by large doses of the oil of the yellow sandal-wood (twenty drops three times a day), but reappeared on the withdrawal of the remedy. Examination December, 1871, revealed a congenital contraction of the meatus—admits only 16 F.; cut it with Civiale, and introduced 24 F. Examination with the endoscope shows two broad inflamed and granular surfaces, involving the entire circumference of the urethra, at about two inches and five inches from the meatus. These were treated by application of a 30-grain solution of the nitrate of silver through the endoscope, at intervals of three or four days, for about a month. Under this treatment the mucous membrane was apparently restored to its normal condition, the discharge ceased, and the patient was believed to be cured. Within a few weeks, however, after a debauch, the difficulty returned, and continued, without treatment, for several months; January, 1872, he presented with a scanty, thin, purulent, discharge. Examination detected stricture at two inches from the meatus; No. 24 bulb passed it with difficulty, and on withdrawal was sharply and firmly held: passing the instrument farther, another band of stricture was recognized at  $4\frac{1}{2}$ , one at  $4\frac{3}{4}$  and one at 5. The anterior structure was then divided by the dilating urethrotome, and 30 F. sound passed easily through. This instrument was directed to be passed daily until healing of the wound was complete. March 30th, some discharge,

though thin and scanty ; no obstruction to passage of 30 bulb through site of anterior stricture, but is arrested at  $4\frac{1}{2}$  inches. The dilating urethrotome was then introduced, and the three posterior bands previously described were dilated and cut above and below ; after which operation 30 bulb passed without hinderance through all. Patient directed to use 30 sound, until no bleeding ensues.

After this time I lost sight of this case, until January 30, 1873, a period of ten months, when, accidentally meeting him, I requested an opportunity of ascertaining the results of the operations. He stated that the discharge continued for about six weeks after the last operation, and that he had had none since, although he had drunken very largely of beer, which had, previously to the operations, always brought back the discharge. Examination with bulbous sound 30 F. failed to detect the slightest trace of a stricture in the course of his urethra. No. 31 was also passed and withdrawn without detecting any unevenness in the urethral walls at any point.

In connection with the three cases above cited, it seems proper for me to state that, with the consent of the gentlemen operated on, I invited several prominent surgeons of the city of New York to meet them at my office on the 20th day of December last, for the purpose of critical personal examination of the results of operations with the dilating urethrotome. Dr. Henry B. Sands and Dr. Robert F. Weir made the examination in the first case, that of Mr. A., with No. 30 F. bulbous sound ; in that of Mr. S., the second case, with No. 28, and completely confirmed my impressions as to the entire absence of any abnormal condition in the urethra in both cases. Again, on the first of the present month, February, 1873, the three cases above related, together with that of Mr. W. (operated on in May last for two strictures, one at one-third of an inch from meatus, and one at an inch and a half)—making in all four cases (comprising originally eighteen bands of stricture) were critically examined at my office on the first of the present month (February, 1873), by Drs. J. W. S. Gouley, Thos. T. Sabine, and Fred. D. Sturgis, of New York, and Dr. F. D. Lente, of Cold Spring, New York.

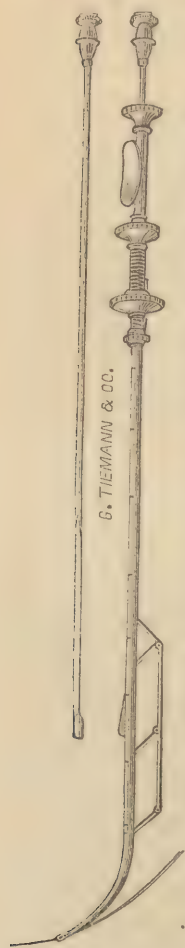
The examination of Mr. S. (previously examined by Drs.



Sands and Weir) was made with the bulbous sound No. 28. In this case there had been no abnormality at or near the meatus, and 28 had been accepted and registered as the normal calibre of his urethra before the operations were made. In the remaining three cases the 30 F. bulb was first used, and afterward No. 31, without detecting in either case any obstruction or unevenness in the course of the urethra, either in the insertion or in the withdrawal of the instrument. During the past year, I have operated with the dilating urethrotome on 58 bands of stricture, presenting in 27 patients. The presence of long-standing gleet was the cause of their seeking relief in every instance. And in every instance (with one exception) the gleet has disappeared within 24 hours as the shortest and one month as the longest time after the final operation. The exception was in the case of J. C., case third reported, where frequent indulgence in venery and alcoholic stimulants was kept up throughout the treatment. This list, moreover, includes four cases where a stricture was left uncut in the curved portion of the urethra beyond the reach of the instrument as then constructed.

In no case was any after-dilatation practised by me or by my direction, subsequent to the healing of the incisions. In one case a gentleman, who had for years been in the habit of occasionally passing a steel sound, continued to do so every two weeks for a couple of months succeeding the division of his strictures; but finding, as he said, "*not the least resistance*," he abandoned its use. With the exception of the operation in Mr. S., which was followed by a troublesome hæmorrhage, nothing has occurred in any case to interfere with the regular habits or occupation of the patient. The dilatation is capable of being made so gradual that no shock is experienced from that cause, and the tension falling solely on the strictures, renders them almost and often wholly insensitve—thus the incisions are virtually painless. I have, therefore, in no case preceded or followed the operation by the administration of quinine or morphine, as has always been my habit when employing the instruments of Holt, Thompson, and Maisonneuve. During the frequent use of this form of dilating urethrotome, the objections which have sug-

gested themselves are—1. Its large size, it being of a circumference of 23 millimetres, equal to 13 of the English scale, when closed, and not capable of material reduction; 2. That it is incapable of being used in the curved portion of the urethra. Recognizing the importance of combining dilatation with division in the treatment of urethral



strictures, and appreciating the defects in my instrument, my friend Dr. J. W. S. Gouley, of New York, contrived an instrument, with expanding springs, intended to remedy these defects. Dr. Gouley's instrument possessed the great advantage of having a circumference of no more than 12 millimetres, equal to No. 5 of the English scale; but it was open to the objection that, on account of the elliptical shape which the dilated springs necessarily assumed, the tension on the stricture might be easily lost by slight slipping of the instrument, when failure in complete division of the stricture would inevitably result. To avoid the possibility of such an accident, and to reach the deeper portions of the urethra, I devised the instrument which I now present. This specimen, also constructed by Messrs. Tiemann & Co., is equal in size to 13 millimetres, or  $5\frac{1}{2}$  of the English scale, and is capable of material reduction. Its mechanism is exceedingly simple. The principle of its action being that of the parallel rule, expanding by means of a screw at the handle, is the same as that upon which my original instrument is constructed. The cutting apparatus is also virtually the same. An independent rod, terminating in a blunt elevation, plays the part of the *bougie-à-boule* for the detection and location of the stricture-points. In

order that it may readily be passed down into the curved portion of the urethra, its shaft, which terminates in a copper probe-point, may be easily adapted to the curves of the deep-



er portions of the canal, and also enables the operator to arrange it for cutting at will upon either the superior or the inferior aspect of the urethra, and, when straightened, can be used as well for operation upon strictures in the straight portion of the canal; a movable hard-rubber slide marks the required depth of insertion. Its efficiency was demonstrated at my office, January 29, 1873, in the presence of Dr. F. D. Sturgis, of New York, by the complete division of a stricture of a previously-ascertained breadth of three-fourths of an inch, and situated one and three-fourths inch from the meatus; the calibre of the canal was thus raised from 23 to 28 millimetres by a simple passage of the knife. This instrument has an expanding power up to 40 F.

In the above recital of my experience with the use of the dilating urethrotome, it will be observed that two somewhat novel ideas are suggested—1. That a very considerable number of cases of chronic urethral discharge are dependent upon the presence and influence of comparatively slight contractions of the urethral calibre; and—2. That the complete division of the cicatricial tissue producing such contractions may be followed by an entire absorption of the cicatricial or stricture tissue, and this quite independently of the long-continued use of sounds insisted on by all authorities as necessary to prevent recontraction of the stricture. Now, in regard to the dependence of chronic purulent urethral secretion upon interference with the calibre of the urethra, it may be stated that, in order to effect a complete emptying of its contents after micturition, a complete and healthy action of the muscular layer surrounding it must occur. The presence of any condition which interferes with this, necessarily produces irregular and imperfect emptying of the urethra; its acrid contents are retained for a time, and to a degree, sufficient to become a cause of irritation. This, it will readily be seen, may occur from such a slight plastic infiltration as simply interferes with the suppleness of the tissue without interference with the normal calibre of the canal. Thus strictures, dilated even beyond the normal size of the urethra, still may give rise to an irritating influence upon the mucous lining of the canal. When, besides, there is an *actual nar-*

*rowing* in the course of the urethra, "the urine impinges with more or less force upon the contracted point,<sup>1</sup> the column of fluid is arrested—in proportion to the degree of arrest is the force of the blow upon the mucous surface at that point, more or less hyperæmia necessarily ensues, and a condition is soon established well adapted to prolong an existing gonorrhœa or gleet; or which, upon slight additional cause such as venereal excitement, or even an unusually acrid condition of the urine, may result in the establishment of a muco-purulent or a purulent discharge without antecedent contagion."

In claiming the general dependence of chronic urethral discharges upon disturbance of the urethral calibre, I am not unaware of the importance attached by many specialists to the presence of local points of granulation, or papillary hypertrophy, along the course of that canal. Accepting the views of Desormeaux, Cruise, and others, I have, in days past, been a firm believer in the value of the endoscope for defining those points with the certainty of ocular inspection; and in the efficiency of local treatment by strong solutions of the nitrate of silver applied to the granulated surfaces through the endoscope; but I have, of late, so frequently observed the same appearances, and by means of the large bulbous sounds have been able to detect bands of stricture underlying them, and further, have seen the granular condition of the mucous membrane promptly disappear upon the complete division of the stricture, without any other treatment, that I have come to look upon the endoscope as a mischievous invention as used for the relief of chronic urethral discharges. The improvement and often apparent cure, which I have seen resulting from local applications through the endoscope, has proved fallacious, for slight and often unrecognized causes have determined the return of the difficulty. I therefore now venture the opinion that localized granular urethritis will be found to result from interference with the muscular movement or with the calibre of the urethra in every instance.

And now, as to the second point. No one could have

<sup>1</sup> "Chronic Urethral Discharges," p. 20.

been more surprised than myself, when, on my quite accidental examination of the urethra of Mr. J. G. A., in October last, I found that complete absorption of the cicatricial tissue had occurred. The interest excited by the apparent result of complete division of the strictures in this case (which, it will be remembered, was the one in which six distinct bands of stricture were present before the operations, and whose case was cited before the New York Journal Association in November, 1871), induced me to seek an examination of patients where like operations had been performed at or near that time. This resulted in the collection of *five* other cases, making six in all—four of which, with an aggregate of seventeen bands of stricture, were examined by committees of surgeons especially skilled in urethral diseases. In cases Nos. I., II., and III., the final operation was performed in March, 1872, and the results examined in the first two in October, 1872; the third, January 31, 1873. Case IV., operated in June, examined in November; Case V., operated in April, and examined in October; Case VI., operated on in July, and examined in November. In all these, an entire absorption of the strictures was absolutely demonstrated.

The above list includes *all* the cases in which I have, thus far, had an opportunity of instituting a final examination. Quite a number of those operated on came from a distance—this fact, and the indisposition of stricture patients to disclose their places of residence, have prevented an extension of the list. The generally-accepted view of authorities, in regard to the results of operations upon strictures of the urethra by any other method than that by the dilating urethrotome, is, that there is a liability to relapse—that, as a rule, unless dilatation, by the occasional passage of a full-sized sound, is kept up *indefinitely*, recontraction of the stricture is likely to occur.

In consideration of the fact that, by every other method except that by combining incision with dilatation, the operation is upon a flaccid urethra, with no accurate guide to the necessary correspondence between the size of the operating instrument and the stricture, and that there are many strictures of larger calibre than can be sundered by the largest instruments in general use, it may be justly inferred that the



strictures operated on by such means are, as a rule, not *completely ruptured or divided*—that the stricture is still left in its continuity, and hence the frequency of relapse. If, on the contrary, the stricture is completely sundered at any point, and by subsequent dilatation a space is filled in with new material, when contraction takes place—as from the known character of cicatricial tissue it is certain to do—this contraction naturally takes place at the expense of the weaker new formation, resulting, as it seems to me, in a wider separation of the sundered ends, the irritation consequent upon contraction of the calibre of the canal, and the retention of the irritating secretions, thus decreasing. Hence, the reinforcement of the strictures, by additional plastic material, diminishes, until, by the natural tendency to absorption of foreign or superfluous tissue, the stricture-tissue gradually and completely disappears. Should this view of the *modus operandi* of the complete absorption of the stricture, after complete division, not prove satisfactory, the profession are invited to suggest a more plausible explanation of the fact, which, it seems to me, must be accepted in regard to the six cases, for the most part aggravated examples of their kind which I have had the honor to report to this Society.

In the cases brought before you it will have been remarked that the occurrence of several distinct bands of stricture in the same urethra is asserted. On this point Mr. Thompson, on “*Strictures of the Urethra*,” London edition, page 68, remarks: “Occasionally several separate strictures may be observed in the same subject. John Hunter records six, Lallemant seven, Colot eight, Du Camp four or five, Leroy d’Etiolles (inventor of the bulbous sound) eleven, and for the most part in the spongy portion of the urethra. Three or four is the most Mr. Thompson has been able to discover.”

Among the patients which I have operated on during the past year there were present six in two cases, five in three, four in one, in three cases three, out of twenty-seven cases observed. Dr. Gonley has recorded four cases with four strictures, and over twenty where three were distinctly defined with the bulbous sound.

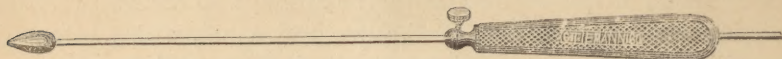
The rarity of the occurrence of multiple strictures in the

same urethra, as reported by authorities, is, I am sure, due to an imperfect method of examination. The use of the ordinary sound is quite valueless in the attempt to recognize or define slight contractions of the urethral canal, which often readily dilate to its normal calibre, while they can be perfectly demonstrated by a bulbous sound two or three sizes smaller. I have frequently met with strictures which could not be appreciated during the passage of a full-sized bulb, but which, after being allowed to remain for a few moments, was perceptibly arrested at a point of stricture on its withdrawal. I may then state it as my conviction that the bulbous sound is the only instrument which can be relied upon for certain diagnosis of strictures of large calibre. For explorations of the straight portion of the urethra, I prefer the metallic olive-shaped sound; for the curved portion, the olive-shaped gum bougies. (Exhibit specimens.) Contractions at the meatus, either congenital or resulting from disease, are of frequent occurrence. Civiale recognized this fact, and is said to have "divided the meatus in nearly three thousand cases, with the best results." Dr. Gouley states that he has divided over two hundred.

By this simple operation I have many times relieved chronic discharges and inflammatory troubles of the urethra and bladder, which had resisted every other means of relief. When such contractions exist, there can be no efficient exploration of the urethra previous to complete division, whether the contractions be cicatricial or congenital. Any resistance to the withdrawal of any bulbous sound which can be introduced through the meatus, is a positive evidence that an abnormal contraction is present sufficient to render nugatory any thorough examination of the deeper portions of the urethra. Bearing this fact in mind, and appreciating the value of the full-sized bulbous sound as a means of diagnosis, I believe that the detection of important urethral contractions will be vastly more frequent, and that complete division of such contractions will result in the relief of much annoyance and suffering from gleet, urethral and vesical inflammation, and irritation, which cannot be permanently removed by any other means.



This metallic, olive-shaped sound, with the small, flexible shaft passing through a perforated handle, to which a thumb-



screw is attached for fixing it at any desired point, is one of a set which I have used very frequently for the last twelve years, and has proved in my hands superior to those of any other form or material in use for examination of the straight portions of the urethra, on account of the complete ease of its introduction and withdrawal, and of the exactness with which it defines and measures every degree of stricture. Its value is also enhanced by its freedom from liability to injury by use or time.

For the relief of close strictures requiring immediate operation, on account of retention of urine, or where, by reason of irritability or extreme density, such strictures are not susceptible of being sufficiently dilated, the instruments and methods of Maisonneuve, Holt, and Thompson are, and I believe must always remain, of inestimable value. Although inadequate for complete and permanent restoration of the urethral calibre—yet, the urgent emergency being relieved, the remaining disability, I am hopeful, may be removed at leisure by the supplementary use of the dilating urethrotome, and thus the continued, often uncertain and perilous, use of sounds or bougies, now required after the ordinary operations on strictures, be virtually abolished.

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